

Chemical Analysis Report

NE-DIST-2019-03-21-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **LSJR South West Boat**

Request ID: **RQ-2019-03-18-08**

Customer: **NE-DIST**

Project ID: **SMP**

Send Reports to:
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8800 Baymeadows Way West
Suite 100
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Certified by: Colin Wright, Program Administrator

Date Certified: 09-APR-2019 12:34

A handwritten signature in black ink, appearing to read "Colin Wright", is displayed on a light-colored rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited by the Florida Department of Health Environmental Laboratory Certification Program or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: LITTLE BLACK CREEK 200M ABOVE MOUTH Collection Date/Time: 03/20/2019 10:40

Field ID: G2NE1184

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071629	EPA 180.1 Rev. 2.0	Turbidity	4.2		NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P361127	
		Sulfate	5.9		mg SO4/L	P361129	
		Color (true)	200		PCU	P360952	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P361323	
	SM 2540 C-97	TDS	80		mg/L	P361289	
	SM 2540 D-97	TSS	2	I	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P361327	
2071632	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.041		mg N/L	P360973	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P360966	
2071635	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P360859	
2071662	EPA 200.7 Rev. 4.4	Barium	14.1		ug/L	P360970	
		Calcium	8.31		mg/L	P360970	
		Iron	600		ug/L	P360970	
		Magnesium	1.98		mg/L	P360970	
		Potassium	0.54	I	mg/L	P360970	
		Sodium	7.7		mg/L	P360970	
		Zinc	5.0	U	ug/L	P360970	
	EPA 200.8 Rev. 5.4	Aluminum	414		ug/L	P360970	
		Antimony	0.050	U	ug/L	P360970	
		Arsenic	0.69		ug/L	P360970	
		Boron**	15.1		ug/L	P360970	
		Cadmium	0.020	U	ug/L	P360970	
		Chromium	0.65	I	ug/L	P360970	
		Copper	0.64	I	ug/L	P360970	
		Lead	0.51		ug/L	P360970	
		Nickel	0.50	U	ug/L	P360970	
		Selenium	0.20	U	ug/L	P360970	
		Silver	0.010	U	ug/L	P360970	
		Thallium	0.10	U	ug/L	P360970	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: GROG BRANCH 150M ABOVE MOUTH

Collection Date/Time: 03/20/2019 11:35

Field ID: G2NE1185

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071630	EPA 180.1 Rev. 2.0	Turbidity	3.8		NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P361127	
		Sulfate	7.1		mg SO4/L	P361129	
	SM 2120 B	Color (true)	160		PCU	P360952	
	SM 2320 B-97	Total Alkalinity	14		mg CaCO3/L	P361323	
	SM 2540 C-97	TDS	68		mg/L	P361289	
	SM 2540 D-97	TSS	2	U	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.070	I	mg F/L	P361327	
2071633	EPA 350.1 Rev. 2.0	Ammonia-N	0.033		mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.45		mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.052		mg N/L	P360973	
	EPA 365.1 Rev. 2.0	Total-P	0.082		mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	13		mg C/L	P360966	
2071636	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.063		mg P/L	P360859	
2071663	EPA 200.7 Rev. 4.4	Barium	17.0		ug/L	P360970	
		Calcium	8.98		mg/L	P360970	
		Iron	580		ug/L	P360970	
		Magnesium	2.11		mg/L	P360970	
		Potassium	0.45	I	mg/L	P360970	
		Sodium	6.5		mg/L	P360970	
		Zinc	5.0	U	ug/L	P360970	
		Aluminum	300		ug/L	P360970	
		Antimony	0.050	U	ug/L	P360970	
		Arsenic	0.56		ug/L	P360970	
	EPA 200.8 Rev. 5.4	Boron**	13.7		ug/L	P360970	
		Cadmium	0.020	U	ug/L	P360970	
		Chromium	0.53	I	ug/L	P360970	
		Copper	0.44	I	ug/L	P360970	
		Lead	0.42		ug/L	P360970	
		Nickel	0.50	U	ug/L	P360970	
		Selenium	0.20	U	ug/L	P360970	
		Silver	0.010	U	ug/L	P360970	
		Thallium	0.10	U	ug/L	P360970	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: SOUTH FORK BLACK CREEK UPSTREAM OF NORTH FORK BLACK CR **Collection Date/Time: 03/20/2019 12:00**

Field ID: G2NE1127

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071638	EPA 180.1 Rev. 2.0	Turbidity	3.0		NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	9.7		mg Cl/L	P361127	
		Sulfate	7.5		mg SO4/L	P361129	
		Color (true)	150		PCU	P360952	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P361324	RPD
	SM 2540 C-97	TDS	70		mg/L	P361289	
	SM 2540 D-97	TSS	2	U	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.073	I	mg F/L	P361328	
2071641	EPA 350.1 Rev. 2.0	Ammonia-N	0.032		mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.40		mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.059		mg N/L	P360973	
	EPA 365.1 Rev. 2.0	Total-P	0.088		mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	12		mg C/L	P360966	
2071644	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.067		mg P/L	P360859	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: MILL LOG CR DOWNSTREAM OF TEST SITE

Collection Date/Time: 03/20/2019 10:00

Field ID: 20030304

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071639	EPA 180.1 Rev. 2.0	Turbidity	3.6		NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	17	A	mg Cl/L	P361185	
		Sulfate	5.6	A	mg SO4/L	P361188	
	SM 2120 B	Color (true)	210		PCU	P360952	
	SM 2320 B-97	Total Alkalinity	15		mg CaCO3/L	P361324	RPD
	SM 2540 C-97	TDS	95		mg/L	P361289	
	SM 2540 D-97	TSS	2	U	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.11		mg F/L	P361328	
2071642	EPA 350.1 Rev. 2.0	Ammonia-N	0.021		mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.63		mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.030		mg N/L	P360973	
	EPA 365.1 Rev. 2.0	Total-P	0.13		mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P360966	
2071645	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.092		mg P/L	P360859	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: BLACK CR @ RR BRIDGE BELOW MILLLOG CR

Collection Date/Time: 03/20/2019 10:15

Field ID: 20030204

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071640	EPA 180.1 Rev. 2.0	Turbidity	4.0	A	NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	13		mg Cl/L	P361185	
		Sulfate	5.6		mg SO4/L	P361188	
	SM 2120 B	Color (true)	230		PCU	P360954	
	SM 2320 B-97	Total Alkalinity	12		mg CaCO3/L	P361324	RPD
	SM 2540 C-97	TDS	86		mg/L	P361289	
	SM 2540 D-97	TSS	2	I	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P361328	
2071643	EPA 350.1 Rev. 2.0	Ammonia-N	0.022		mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.62		mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P360974	
	EPA 365.1 Rev. 2.0	Total-P	0.062		mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	19		mg C/L	P360966	
2071646	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.042		mg P/L	P360859	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Sample Location: LITTLE BLACK CREEK 200M ABOVE MOUTH Collection Date/Time: 03/20/2019 10:50

Field ID: FB 03202019

Matrix: W-FIELD-BK

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071647	EPA 180.1 Rev. 2.0	Turbidity	0.10	U	NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	0.20	U	mg Cl/L	P361185	
		Sulfate	0.20	U	mg SO4/L	P361188	
		Color (true)	2.5	U	PCU	P360953	
	SM 2320 B-97	Total Alkalinity	0.65	U	mg CaCO3/L	P361324	RPD
	SM 2540 C-97	TDS	15	U	mg/L	P361289	
	SM 2540 D-97	TSS	2	U	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P361328	
2071648	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	U	mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.080	U	mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P360974	
	EPA 365.1 Rev. 2.0	Total-P	0.002	U	mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	0.50	U	mg C/L	P360966	
2071649	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P360859	
2071665	EPA 200.7 Rev. 4.4	Barium	1.0	U	ug/L	P360970	
		Calcium	0.075	U	mg/L	P360970	
		Iron	30	U	ug/L	P360970	
		Magnesium	0.040	U	mg/L	P360970	
		Potassium	0.30	U	mg/L	P360970	
		Sodium	0.50	U	mg/L	P360970	
		Zinc	5.0	U	ug/L	P360970	
		Aluminum	5.0	U	ug/L	P360970	
	EPA 200.8 Rev. 5.4	Antimony	0.050	U	ug/L	P360970	
		Arsenic	0.050	U	ug/L	P360970	
		Boron**	2.0	U	ug/L	P360970	
		Cadmium	0.020	U	ug/L	P360970	
		Chromium	0.40	U	ug/L	P360970	
		Copper	0.40	U	ug/L	P360970	
		Lead	0.20	U	ug/L	P360970	
		Nickel	0.50	U	ug/L	P360970	
		Selenium	0.20	U	ug/L	P360970	
		Silver	0.010	U	ug/L	P360970	
		Thallium	0.10	U	ug/L	P360970	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

EPA 353.2 Rev. 2.0: The result was confirmed on 03/25/2019.

Sample Location: LITTLE BLACK 200M ABOVE MOUTH

Collection Date/Time: 03/20/2019 10:45

Field ID: G2NE1184 DUP

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
2071631	EPA 180.1 Rev. 2.0	Turbidity	4.9		NTU	P360864	
	EPA 300.0 Rev. 2.1	Chloride	12		mg Cl/L	P361127	
		Sulfate	5.9		mg SO4/L	P361129	
	SM 2120 B	Color (true)	200		PCU	P360952	
	SM 2320 B-97	Total Alkalinity	13		mg CaCO3/L	P361324	RPD
	SM 2540 C-97	TDS	79		mg/L	P361289	
	SM 2540 D-97	TSS	4	I	mg/L	P361103	
	SM 4500 F-C-97	Fluoride	0.060	I	mg F/L	P361328	
2071634	EPA 350.1 Rev. 2.0	Ammonia-N	0.025		mg N/L	P361249	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.54		mg N/L	P361074	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.037		mg N/L	P360973	
	EPA 365.1 Rev. 2.0	Total-P	0.063		mg P/L	P361192	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P360966	
2071637	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.040		mg P/L	P360859	
2071664	EPA 200.7 Rev. 4.4	Barium	14.3		ug/L	P360970	
		Calcium	8.50		mg/L	P360970	
		Iron	590		ug/L	P360970	
		Magnesium	2.01		mg/L	P360970	
		Potassium	0.55	I	mg/L	P360970	
		Sodium	7.8		mg/L	P360970	
		Zinc	5.0	U	ug/L	P360970	
		Aluminum	399		ug/L	P360970	
		Antimony	0.050	U	ug/L	P360970	
		Arsenic	0.69		ug/L	P360970	
	EPA 200.8 Rev. 5.4	Boron**	15.7		ug/L	P360970	
		Cadmium	0.020	U	ug/L	P360970	
		Chromium	0.65	I	ug/L	P360970	
		Copper	0.76	I	ug/L	P360970	
		Lead	0.45		ug/L	P360970	
		Nickel	0.50	U	ug/L	P360970	
		Selenium	0.20	U	ug/L	P360970	
		Silver	0.010	U	ug/L	P360970	
		Thallium	0.10	U	ug/L	P360970	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

EPA 351.2 Rev. 2.0: Batch matrix spike recoveries are unavailable because of high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360864

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360970

Component	Result	Code	Units
Barium	1.0	U	ug/L
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360970

Component	Result	Code	Units
Aluminum	5.0	U	ug/L
Antimony	0.050	U	ug/L
Arsenic	0.050	U	ug/L
Boron	2.0	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.40	U	ug/L
Copper	0.40	U	ug/L
Lead	0.20	U	ug/L
Nickel	0.50	U	ug/L
Selenium	0.20	U	ug/L
Silver	0.010	U	ug/L
Thallium	0.10	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361127

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361129

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361185

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361188

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361249

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P361074

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360973

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360974

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361192

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360859

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P360952

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2120 B
Batch ID: P360953

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Quality Assurance Report

Method Blank Results

Reference Method: SM 2120 B
Batch ID: P360954

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P361323

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2320 B-97
Batch ID: P361324

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P361289

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P361103

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P361327

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 4500 F-C-97
Batch ID: P361328

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P360966

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360970

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Barium	104		P	85 - 115
Calcium	107		P	85 - 115
Iron	103		P	85 - 115
Magnesium	107		P	85 - 115
Potassium	105		P	85 - 115
Sodium	104		P	85 - 115
Zinc	105		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360970

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Aluminum	97.1		P	85 - 115
Antimony	94.0		P	85 - 115
Arsenic	97.8		P	85 - 115
Boron	92.9		P	85 - 115
Cadmium	94.9		P	85 - 115
Chromium	89.3		P	85 - 115
Copper	98.2		P	85 - 115
Lead	92.8		P	85 - 115
Nickel	95.8		P	85 - 115
Selenium	97.1		P	85 - 115
Silver	98.5		P	85 - 115
Thallium	92.8		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361127

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361129

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	105		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361185

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	99.4		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361188

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	99.8		P	90 - 110

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361249

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	101		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P361074

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	105		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360973

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360974

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	106		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361192

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.9		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360859

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	98.8		P	90 - 110

Reference Method: SM 2120 B
Batch ID: P360952

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	101		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P360953

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	105		P	85 - 115

Reference Method: SM 2120 B
Batch ID: P360954

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Color (true)	103		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 2320 B-97
Batch ID: P361323

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.3		P	98 - 107

Reference Method: SM 2320 B-97
Batch ID: P361324

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	98.4		P	98 - 107

Reference Method: SM 4500 F-C-97
Batch ID: P361327

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	99.7		P	91 - 105

Reference Method: SM 4500 F-C-97
Batch ID: P361328

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	100		P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360966

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	99.9		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360970

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071561	Barium	91.9		P	80 - 120
2071561	Calcium	103		P	80 - 120
2071561	Iron	109		P	80 - 120
2071561	Magnesium	110		P	80 - 120
2071561	Potassium	105		P	80 - 120
2071561	Sodium	101		P	80 - 120
2071561	Zinc	92.6		P	80 - 120
2071726	Barium	96.1	97.6	P/P	80 - 120
2071726	Calcium	103		P	80 - 120
2071726	Iron	105	105	P/P	80 - 120
2071726	Magnesium	104		P	80 - 120
2071726	Potassium	104	105	P/P	80 - 120
2071726	Sodium	103		P	80 - 120
2071726	Zinc	98.5	99.0	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360970

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071561	Aluminum	95.7		P	80 - 120
2071561	Antimony	97.6		P	80 - 120
2071561	Arsenic	99.2		P	80 - 120
2071561	Boron	96.9		P	80 - 120
2071561	Cadmium	97.1		P	80 - 120
2071561	Chromium	92.0		P	80 - 120
2071561	Copper	96.6		P	80 - 120
2071561	Lead	96.0		P	80 - 120
2071561	Nickel	95.7		P	80 - 120
2071561	Selenium	96.9		P	80 - 120
2071561	Silver	101		P	80 - 120
2071561	Thallium	98.0		P	80 - 120
2071726	Aluminum	95.9	97.1	P/P	80 - 120
2071726	Antimony	98.4	99.0	P/P	80 - 120
2071726	Arsenic	99.9	101	P/P	80 - 120
2071726	Boron	97.1	97.1	P/P	80 - 120
2071726	Cadmium	99.9	100	P/P	80 - 120
2071726	Chromium	92.7	92.6	P/P	80 - 120
2071726	Copper	94.9	94.8	P/P	80 - 120
2071726	Lead	96.8	97.0	P/P	80 - 120
2071726	Nickel	94.8	95.0	P/P	80 - 120
2071726	Selenium	96.7	96.9	P/P	80 - 120
2071726	Silver	99.9	101	P/P	80 - 120
2071726	Thallium	98.1	99.7	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361127

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071516	Chloride	98.4		P	90 - 110
2071609	Chloride	100		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361129

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071516	Sulfate	101		P	90 - 110
2071609	Sulfate	101		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361185

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071639	Chloride	101		P	90 - 110
2071702	Chloride	99.6		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361188

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071639	Sulfate	101		P	90 - 110
2071702	Sulfate	99.4		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361249

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071632	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360973

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071610	NO2NO3-N	104		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360974

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071643	NO2NO3-N	103	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361192

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071643	Total-P	97.3	97.6	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360859

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071611	O-Phosphate-P	95.8	97.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P361327

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071624	Fluoride	101	100	P/P	91 - 105

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P361328

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2072023	Fluoride	103	104	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P360966

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
2071575	Organic Carbon	102	102	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P360864

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071640	Turbidity	16.6	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P360970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071726	Barium	1.31	Spike	P	0 - 20
2071726	Calcium	1.42	Spike	P	0 - 20
2071726	Iron	0.0820	Spike	P	0 - 20
2071726	Magnesium	0.00543	Spike	P	0 - 20
2071726	Potassium	1.09	Spike	P	0 - 20
2071726	Sodium	1.41	Spike	P	0 - 20
2071726	Zinc	0.502	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P360970

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071726	Aluminum	1.23	Spike	P	0 - 20
2071726	Antimony	0.623	Spike	P	0 - 20
2071726	Arsenic	1.03	Spike	P	0 - 20
2071726	Boron	0.0122	Spike	P	0 - 20
2071726	Cadmium	0.134	Spike	P	0 - 20
2071726	Chromium	0.0817	Spike	P	0 - 20
2071726	Copper	0.136	Spike	P	0 - 20
2071726	Lead	0.157	Spike	P	0 - 20
2071726	Nickel	0.131	Spike	P	0 - 20
2071726	Selenium	0.178	Spike	P	0 - 20
2071726	Silver	0.973	Spike	P	0 - 20
2071726	Thallium	1.68	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361127

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071609	Chloride	1.92	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361129

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071609	Sulfate	2.18	Sample	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361185

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071639	Chloride	1.50	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P361188

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071639	Sulfate	0.942	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P361249

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071632	Ammonia-N	0.548	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P361074

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071399	Kjeldahl Nitrogen	1.91	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360973

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071610	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P360974

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071643	NO2NO3-N	0.826	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P361192

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071643	Total-P	0.310	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P360859

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071611	O-Phosphate-P	1.02	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: SM 2120 B
Batch ID: P360952

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071624	Color (true)	5.61	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360953

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071674	Color (true)	0.288	Sample	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P360954

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071857	Color (true)	0.263	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P361323

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071624	Total Alkalinity	0.554	Sample	P	0 - 1.6

Reference Method: SM 2320 B-97
Batch ID: P361324

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2072023	Total Alkalinity	3.79	Sample	F	0 - 1.6

Reference Method: SM 2540 C-97
Batch ID: P361289

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071674	TDS	1.29	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P361327

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071624	Fluoride	0.484	Spike	P	0 - 3.5

Reference Method: SM 4500 F-C-97
Batch ID: P361328

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2072023	Fluoride	0.484	Spike	P	0 - 3.5

Quality Assurance Report Precision

Reference Method: SM 5310 B-00
Batch ID: P360966

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
2071575	Organic Carbon	0.519	Spike	P	0 - 20

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A90164

Included Lab Sample IDs: 2071635, 2071636, 2071637, 2071644, 2071645, 2071646, 2071649

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.6	P/P	90 - 110
O-Phosphate-P	99.6	98.5	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A90165

Included Lab Sample IDs: 2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	99.5	99.5	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A90212

Included Lab Sample IDs: 2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	102	102	P/P	90 - 115
Color (true)	102	104	P/P	90 - 115
Color (true)	104	104	P/P	90 - 115

Reference Method: SM 5310 B-00

Run ID: A90216

Included Lab Sample IDs: 2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.7	98.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A90217

Included Lab Sample IDs: 2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	104	104	P/P	90 - 110
NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90245

Included Lab Sample IDs: 2071662, 2071663, 2071664, 2071665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Barium	98.4	104	P/P	90 - 110
Barium	99.1	102	P/P	95 - 105
Calcium	102	103	P/P	90 - 110
Calcium	103	104	P/P	95 - 105
Iron	101	102	P/P	90 - 110
Iron	102	104	P/P	95 - 105
Magnesium	102	103	P/P	90 - 110
Magnesium	103	105	P/P	95 - 105
Potassium	101	103	P/P	95 - 105
Potassium	99.8	101	P/P	90 - 110
Sodium	101	105	P/P	95 - 105
Sodium	103	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A90245

Included Lab Sample IDs: 2071662, 2071663, 2071664, 2071665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Zinc	100	103	P/P	95 - 105
Zinc	98.7	104	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A90254

Included Lab Sample IDs: 2071662, 2071663, 2071664, 2071665

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Aluminum	101	99.0	P/P	90 - 110
Aluminum	101	100	P/P	90 - 110
Aluminum	100	101	P/P	90 - 110
Antimony	97.8	99.3	P/P	90 - 110
Antimony	99.0	97.8	P/P	90 - 110
Antimony	99.3	98.0	P/P	90 - 110
Arsenic	102	97.7	P/P	90 - 110
Arsenic	97.7	99.2	P/P	90 - 110
Arsenic	99.2	99.1	P/P	90 - 110
Boron	101	96.9	P/P	90 - 110
Boron	95.1	101	P/P	90 - 110
Boron	96.9	98.8	P/P	90 - 110
Cadmium	97.7	98.8	P/P	90 - 110
Cadmium	98.8	99.3	P/P	90 - 110
Cadmium	99.3	98.6	P/P	90 - 110
Chromium	97.2	99.7	P/P	90 - 110
Chromium	99.7	99.8	P/P	90 - 110
Chromium	99.8	99.2	P/P	90 - 110
Copper	100	99.8	P/P	90 - 110
Copper	100	99.1	P/P	90 - 110
Copper	99.1	100	P/P	90 - 110
Lead	98.3	98.8	P/P	90 - 110
Lead	98.6	97.9	P/P	90 - 110
Lead	98.8	98.6	P/P	90 - 110
Nickel	98.1	98.4	P/P	90 - 110
Nickel	98.2	98.1	P/P	90 - 110
Nickel	98.4	99.1	P/P	90 - 110
Selenium	96.4	98.7	P/P	90 - 110
Selenium	98.7	97.8	P/P	90 - 110
Selenium	99.0	96.4	P/P	90 - 110
Silver	103	103	P/P	90 - 110
Silver	103	104	P/P	90 - 110
Silver	104	104	P/P	90 - 110
Thallium	92.3	94.1	P/P	90 - 110
Thallium	94.1	94.4	P/P	90 - 110
Thallium	94.4	91.7	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90259

Included Lab Sample IDs: 2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	103	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A90259

Included Lab Sample IDs: 2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	102	102	P/P	90 - 110
Chloride	102	103	P/P	90 - 110
Chloride	103	103	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110
Sulfate	104	104	P/P	90 - 110
Sulfate	104	105	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A90266

Included Lab Sample IDs: 2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	104	104	P/P	90 - 110
Kjeldahl Nitrogen	104	99.4	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A90315

Included Lab Sample IDs: 2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	102	102	P/P	90 - 110
Ammonia-N	102	102	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90320

Included Lab Sample IDs: 2071632, 2071633, 2071634, 2071641, 2071642, 2071643

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	102	99.4	P/P	90 - 110
Total-P	99.4	101	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A90331

Included Lab Sample IDs: 2071648

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	101	100	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A90337

Included Lab Sample IDs: 2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	98.4	P/P	90 - 110
Total Alkalinity	98.4	98.9	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: SM 4500 F-C-97

Run ID: A90337

Included Lab Sample IDs: 2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	102	104	P/P	90 - 110
Fluoride	103	102	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			Precision SMP	MS
			LCS				
EPA 180.1 Rev. 2.0	Turbidity					16.6	
EPA 200.7 Rev. 4.4	Barium	104	91.9	96.1	97.6		1.31
	Calcium	107	103	103			1.42
	Iron	103	109	105	105		0.0820
	Magnesium	107	110	104			0.0054
	Potassium	105	105	104	105		1.09
	Sodium	104	101	103			1.41
	Zinc	105	92.6	98.5	99.0		0.502
EPA 200.8 Rev. 5.4	Aluminum	97.1	95.7	95.9	97.1		1.23
	Antimony	94.0	97.6	98.4	99.0		0.623
	Arsenic	97.8	99.2	99.9	101		1.03
	Boron	92.9	96.9	97.1	97.1		0.0122
	Cadmium	94.9	97.1	99.9	100		0.134
	Chromium	89.3	92.0	92.7	92.6		0.0817
	Copper	98.2	96.6	94.9	94.8		0.136
	Lead	92.8	96.0	96.8	97.0		0.157
	Nickel	95.8	95.7	94.8	95.0		0.131
	Selenium	97.1	96.9	96.7	96.9		0.178
	Silver	98.5	101	99.9	101		0.973
	Thallium	92.8	98.0	98.1	99.7		1.68
EPA 300.0 Rev. 2.1	Chloride	103	100	98.4		1.92	
	Chloride	99.4	101	99.6		1.50	
	Sulfate	105	101	101		2.18	
	Sulfate	99.8	101	99.4		0.942	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	102			0.548
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	105					1.91
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	104				0.0
	NO ₂ NO ₃ -N	106	103	102			0.826
EPA 365.1 Rev. 2.0	Total-P	98.9	97.3	97.6			0.310
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	98.8	95.8	97.0			1.02
SM 2120 B	Color (true)	101				5.61	
	Color (true)	105				0.288	
	Color (true)	103				0.263	
SM 2320 B-97	Total Alkalinity	98.3				0.554	
	Total Alkalinity	98.4				3.79	
SM 2540 C-97	TDS					1.29	
SM 4500 F-C-97	Fluoride	99.7	101	100			0.484
	Fluoride	100	103	104			0.484
SM 5310 B-00	Organic Carbon	99.9	102	102			0.519

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	2071662, 2071663, 2071664, 2071665
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	2071662, 2071663, 2071664, 2071665
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	2071635, 2071636, 2071637, 2071644, 2071645, 2071646, 2071649
SM 2120 B / E31780	True Color measured at 450 nm	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices using a maximum of 250 mL of sample	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	2071632, 2071633, 2071634, 2071641, 2071642, 2071643, 2071648

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	03/21/2019			03/21/2019 15:47	Adrian Shelby	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
EPA 200.7 Rev. 4.4	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/26/2019 13:59	Betina Topolski	2071665
	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/26/2019 15:56	Betina Topolski	2071662
	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/26/2019 16:01	Betina Topolski	2071663
	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/26/2019 16:06	Betina Topolski	2071664
EPA 200.8 Rev. 5.4	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/27/2019 04:28	Robert K Palmer	2071665
	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/27/2019 07:10	Robert K Palmer	2071662
	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/27/2019 07:19	Robert K Palmer	2071663
	03/21/2019	03/25/2019 13:00	Elliott D. Healy	03/27/2019 07:48	Robert K Palmer	2071664
EPA 300.0 Rev. 2.1	03/21/2019			03/27/2019 03:16	Lipi Saha	2071629
	03/21/2019			03/27/2019 03:52	Lipi Saha	2071630
	03/21/2019			03/27/2019 04:04	Lipi Saha	2071631
	03/21/2019			03/27/2019 04:16	Lipi Saha	2071638
	03/21/2019			03/27/2019 21:32	Lipi Saha	2071639
	03/21/2019			03/27/2019 23:33	Lipi Saha	2071640
	03/21/2019			03/27/2019 23:45	Lipi Saha	2071647
EPA 350.1 Rev. 2.0	03/21/2019			03/28/2019 10:39	Ping Hua	2071632
	03/21/2019			03/28/2019 10:45	Ping Hua	2071633
	03/21/2019			03/28/2019 10:47	Ping Hua	2071634
	03/21/2019			03/28/2019 10:48	Ping Hua	2071641
	03/21/2019			03/28/2019 10:50	Ping Hua	2071642
	03/21/2019			03/28/2019 10:59	Ping Hua	2071643
	03/21/2019			03/28/2019 11:02	Ping Hua	2071648
EPA 351.2 Rev. 2.0	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 09:54	Joseph Suarez	2071632
	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 09:59	Joseph Suarez	2071633
	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 10:00	Joseph Suarez	2071634
	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 10:02	Joseph Suarez	2071641
	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 10:03	Joseph Suarez	2071642
	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 10:05	Joseph Suarez	2071643
	03/21/2019	03/26/2019 12:00	Adrian Shelby	03/27/2019 10:06	Joseph Suarez	2071648
EPA 353.2 Rev. 2.0	03/21/2019			03/25/2019 10:49	Beverly Y. Sanders	2071632
	03/21/2019			03/25/2019 10:51	Beverly Y. Sanders	2071633
	03/21/2019			03/25/2019 10:52	Beverly Y. Sanders	2071634
	03/21/2019			03/25/2019 10:53	Beverly Y. Sanders	2071641
	03/21/2019			03/25/2019 10:54	Beverly Y. Sanders	2071642
	03/21/2019			03/25/2019 11:01	Beverly Y. Sanders	2071643
	03/21/2019			03/25/2019 11:07	Beverly Y. Sanders	2071648
EPA 365.1 Rev. 2.0	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/28/2019 17:55	Rosalyn Ballman	2071643
	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/28/2019 17:59	Rosalyn Ballman	2071632

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 365.1 Rev. 2.0	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/28/2019 18:02	Rosalyn Ballman	2071633
	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/28/2019 18:03	Rosalyn Ballman	2071634
	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/28/2019 18:05	Rosalyn Ballman	2071641
	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/28/2019 18:06	Rosalyn Ballman	2071642
	03/21/2019	03/28/2019 13:10	Adrian Shelby	03/29/2019 13:45	Rosalyn Ballman	2071648
EPA 365.1 Rev. 2.0 dissolved	03/21/2019			03/21/2019 15:44	Julia Storbeck	2071649
	03/21/2019			03/21/2019 15:46	Julia Storbeck	2071635
	03/21/2019			03/21/2019 15:51	Julia Storbeck	2071636
	03/21/2019			03/21/2019 15:52	Julia Storbeck	2071637
	03/21/2019			03/21/2019 15:55	Julia Storbeck	2071644, 2071645
SM 2120 B	03/21/2019			03/21/2019 15:56	Julia Storbeck	2071646
	03/21/2019			03/21/2019 15:58	Mariam Hanna	2071647
	03/21/2019			03/21/2019 16:17	Mariam Hanna	2071629
	03/21/2019			03/21/2019 16:19	Mariam Hanna	2071630
	03/21/2019			03/21/2019 16:20	Mariam Hanna	2071631
SM 2320 B-97	03/21/2019			03/21/2019 16:21	Mariam Hanna	2071638
	03/21/2019			03/21/2019 16:22	Mariam Hanna	2071639, 2071640
	03/21/2019			03/30/2019 04:22	Samantha Davila	2071629
	03/21/2019			03/30/2019 04:32	Samantha Davila	2071630
	03/21/2019			03/30/2019 06:05	Samantha Davila	2071631
SM 2540 C-97	03/21/2019			03/30/2019 06:15	Samantha Davila	2071638
	03/21/2019			03/30/2019 06:26	Samantha Davila	2071639
	03/21/2019			03/30/2019 06:37	Samantha Davila	2071640
	03/21/2019			03/30/2019 06:50	Samantha Davila	2071647
	03/21/2019			03/25/2019 17:20	Mariam Hanna	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 2540 D-97	03/21/2019			03/25/2019 17:00	Mariam Hanna	2071629, 2071630, 2071631, 2071638, 2071639, 2071640, 2071647
SM 4500 F-C-97	03/21/2019			03/30/2019 04:22	Samantha Davila	2071629
	03/21/2019			03/30/2019 04:32	Samantha Davila	2071630
	03/21/2019			03/30/2019 06:05	Samantha Davila	2071631
	03/21/2019			03/30/2019 06:15	Samantha Davila	2071638
	03/21/2019			03/30/2019 06:26	Samantha Davila	2071639
SM 5310 B-00	03/21/2019			03/30/2019 06:37	Samantha Davila	2071640
	03/21/2019			03/30/2019 06:50	Samantha Davila	2071647
	03/21/2019			03/23/2019 03:13	Julia Storbeck	2071632
	03/21/2019			03/23/2019 03:26	Julia Storbeck	2071633
	03/21/2019			03/23/2019 03:38	Julia Storbeck	2071634
	03/21/2019			03/23/2019 03:50	Julia Storbeck	2071641
	03/21/2019			03/23/2019 04:02	Julia Storbeck	2071642

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
SM 5310 B-00	03/21/2019			03/23/2019 04:14	Julia Storbeck	2071643
	03/21/2019			03/23/2019 04:27	Julia Storbeck	2071648